

Isom, Debra A (Debbi)

From: Huckaby, Alisa [AHUC461@ECY.WA.GOV]
 Sent: Monday, May 14, 2001 2:07 PM
 To: 'Debra_A_Debbi_Isom@RL.gov'
 Cc: 'Glenn_Richardson@rl.gov'; 'Kevin_D_Leary@rl.gov'; 'Roger_W_Szelmezcza@RL.gov';
 'Jamie_G_Granger@rl.gov'; Jamison, Fred; Caggiano, Joseph; Huckaby, Alisa
 Subject: FW: RE: Brief Interpretation of LERF Leachate and Basin Chemistry

Debbi,

Ecology hopes to modify the RCRA permit for the Liquid Effluent Retention Facility (LERF) within the next 15 months. DOE and Contractors provided information that I would like to have placed on the administrative record. During a monthly project management meeting, I took an action item to request the below information be placed on the administrative record in support of the upcoming permit modification. Would you please place these electronic mail messages on the LERF administrative record? If you have any questions or would like to discuss, please call me at 736-3034. In advance, thank you for your assistance.

Alisa Huckaby
 Washington State Department of Ecology
 509/736-3034
 ahuc461@ecy.wa.gov
 FAX 736-3030

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> -----Original Message-----

> From: Kevin_D_Leary@RL.gov [mailto:Kevin_D_Leary@RL.gov]
 > Sent: Wednesday, February 28, 2001 10:53 AM
 > To: Caggiano, Joseph; Conaway, Kathy; Huckaby, Alisa; Jamison, Fred
 > Cc: K_M_Mike_Thompson@rl.gov; Glenn_Richardson@rl.gov;
 > Roger_W_Szelmezcza@rl.gov
 > Subject: RE: Brief Interpretation of LERF Leachate and Basin
 > Chemistry
 >
 > Attached--please find a brief evaluation of the LERF Basin and Leachate
 > Chemical analysis for your information. Roger Szelmezcza, in my opinion,
 > did an excellent job at interpreting and summarizing his
 > observations/comparisons between the two sources of waste water. I look
 > forward to our to your agenda and our corresponding discussion set for
 > March 14. If I can be of further assistance to you prior to the meeting,
 > don't hesitate in contacting me.

> Kevin D. Leary
 > Hydrogeologist/Hydrologist and Certified Professional Soil Scientist
 > U.S. Dept. of Energy, Richland
 > (509)-373-7285
 > E-Mail: kevin_d_leary@rl.gov

> From: Szelmezcza, Roger W
 > Sent: Tuesday, February 27, 2001 1:32 PM
 > To: Richardson, Glenn; Leary, Kevin D
 > Cc: Granger, Jamie G; Lueck, Kristi J; Smith, Donald K (Kent)
 > Subject: LERF Leachate Data Evaluation
 > Glenn/Kevin,

>
 > This afternoon Glenn asked if we had information regarding contaminants in
 > the leachate. I looked at the leachate and waste data and provide the
 > following qualitative evaluation. Because the leachate and basin contents
 > were not sampled and analyzed at the same timeframe in all cases,
 > quantitative conclusions cannot be made from the data, but it does

> generally support the case that the primary liners are serving their
> intended purpose.
>
> Between the primary and secondary geomembrane liners there is a bentonite
> carpet layer and drainage gravel layer that leachate would percolate
> through before collection in the sump. Because the liquid level in the
> secondary liner is maintained below the top level of the leachate
> collection sump, the bentonite carpet and drainage gravel layers are under
> a negative hydraulic gradient, preventing the leachate from reaching
> equilibrium with the waste in the basin.
>
> The bentonite carpet liner consists of bentonite (sodium-washed
> montmorillonite clay) which has a favorable cation exchange for absorption
> of cations such as ammonium and positively-charged metal ions. This layer
> is expected to retard migration of cations through the liner system.
> Anions would be expected to pass through the bentonite layer.
> Montmorillonite also contains aluminum, iron, magnesium, and silica.
> Weathering of this mineral will liberate these ions.
>
> The drainage gravel layer consists of thoroughly washed and screened,
> naturally occurring rock. Physical specifications for the drainage layer
> are given in Table 4-5 of the permit application.
>
> Certain waste constituents such as tritium are expected to permeate the
> geomembrane liners and be detected in the leachate. Tritium was detected
> in the leachate of all 3 basins. This supports the concept the leachate
> is derived from the waste in the basin and not external sources such as
> precipitation or condensation.
>
> The metals data is inconclusive, as some metals were detected at higher
> concentration in the leachate than in the waste, and some metals in the
> leachate are not present in the waste. This is believed to be a result of
> leaching from the bentonite and/or drainage gravel liners.
>
> The radionuclide results also indicate leachate is derived from waste in
> the basins, but some attenuation has occurred. Some radioactive ions
> present in the wastes have been detected in the leachate, although
> generally at concentrations lower than in the waste. This is corroborated
> by total alpha and gross beta analysis.
>
> It is expected the leachate collection sump which always contains some
> liquid provides an ideal medium for biological growth. This is reflected
> in the total organic carbon data.
>
> The organic data indicates that organic compounds present in the wastes
> have not been detected in the leachate collection system. Movement of
> these materials through the permeable clay and gravel layers would not be
> retarded by the cation exchange capacity of these materials. The data
> suggests the organic compounds from the listed wastes stored in the basins
> have not permeated the liners.
>
> As stated earlier, there are limitations to the data provided. Please
> call me at 373-4200 if you have any questions on this information.
>
> Roger
>
>
>